We claim:

1.   A management information base for configuring a domain-specific source address filter, the management information base comprising:

at least one management object defining a number of addresses for detecting packets requiring domain-specific network address translation; and

a management object defining a domain for said number of addresses.

2.   The management information base of claim 1, wherein the at least one management object comprises:

a first management object defining a beginning address for a range of addresses; and

a second management object defining a prefix length indicating a number of contiguous bits in an address mask.

3.   The management information base of claim 1, wherein the at least one management object comprises:

a first management object defining a beginning address for a range of addresses; and

a second management object defining an ending address for the range of addresses.

4.   The management information base of claim 1, wherein the at least one management object comprises:

a first management object defining a beginning address for a range of addresses; and

a second management object defining an address range size indicating a number of addresses in the range of addresses.

5.   The management information base of claim 1, wherein the at least one management object comprises:

a management object for including an individual address in the number of addresses.

6.   The management information base of claim 1, further comprising:

a management object defining a domain-specific translation pool for translating said packets requiring domain-specific network address translation.

7.   The management information base of claim 6, wherein the domain-specific translation pool is associated with one of an inbound domain and an outbound domain, and wherein the management object defining the domain-specific translation pool indicates one of an inbound domain translation pool and an outbound domain translation pool.

8.   A management information base for configuring a domain-specific translation pool, the management information base comprising:

at least one management object defining a number of addresses in the domain-specific translation pool; and

5   a management object defining a domain for said number of addresses.

9.   The management information base of claim 8, wherein the at least one management object comprises:

a first management object defining a beginning address for a range of addresses; and

10   a second management object defining a prefix length indicating a number of contiguous bits in an address mask.

10.   The management information base of claim 8, wherein the at least one management object comprises:

a first management object defining a beginning address for a range of addresses; and

15   a second management object defining an ending address for the range of addresses.

11.   The management information base of claim 8, wherein the at least one management object comprises:

20   a first management object defining a beginning address for a range of addresses; and

a second management object defining an address range size indicating a number of addresses in the range of addresses.

12.   The management information base of claim 8, wherein the at least one management object comprises:

25   object comprises:

.   a management object for including an individual address in the number of addresses.

13.   A management information base for configuring address ranges in a multi-domain network address translator, the management information base comprising:

a management object (wfNatAddressRangeDelete) to create or delete a table entry;

a management object (wfNatAddressRangeDisable) to enable or disable the table

5   entry;

a management object (wfNatAddressRangeAddress) indicating a beginning address for the address range;

a management object (wfNatAddressRangePrefixLen) indicating a prefix length;

a management object (wfNatAddressRangeIndex) indicating a unique value (index)

10   for the table entry;

a management object (wfNatAddressRangeNto1Addr) indicating an N-to-1 translation address for a source address filter;

a management object (wfNatAddressRangeType) indicating an address range type equal to one of source address filter, translation pool, domain-specific source address filter, and domain-specific translation pool;

a management object (wfNatAddressRangeDomain) indicating an address domain for the address range if the address range type (i.e., wfNatAddressRangeType) is one of domain-specific source address filter and domain-specific translation pool;

a management object (wfNatAddressRangeTransPool) indicating a domain-specific

20   translation pool for the address range if the address range type (i.e., wfNatAddressRangeType) is domain-specific source address filter;

a management object (wfNatAddressRangeStaticNextHop) indicating an address of a next hop for the address range; and

a management object (wfNatAddressRangeUnnumCct) indicating whether the address

25   range is associated with an unnumbered interface.

14.   An apparatus for multi-domain network address translation, the apparatus comprising:

a management agent; and

a management information bases accessible through the management agent wherein the management information base comprises:

5   at least one management object defining a number of addresses for detecting packets requiring domain-specific network address translation; and

a management object defining a domain for said number of addresses.

15.   The apparatus of claim 14, wherein the at least one management object comprises:

a first management object defining a beginning address for a range of addresses; and

10   a second management object defining a prefix length indicating a number of contiguous bits in an address mask.

16.   The apparatus of claim 14, wherein the at least one management object comprises:

a first management object defining a beginning address for a range of addresses; and

a second management object defining an ending address for the range of addresses.

17.   The apparatus of claim 14, wherein the at least one management object comprises:

a first management object defining a beginning address for a range of addresses; and

20   a second management object defining an address range size indicating a number of addresses in the range of addresses.

18.   The apparatus of claim 14, wherein the at least one management object comprises:

a management object for including an individual address in the number of addresses.

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19.   The apparatus of claim 14, further comprising:

a management object defining a domain-specific translation pool for translating said packets requiring domain-specific network address translation.

30   20.   The apparatus of claim 19, wherein the domain-specific translation pool is associated

with one of an inbound domain and an outbound domain, and wherein the management object

defining the domain-specific translation pool indicates one of an inbound domain translation

pool and an outbound domain translation pool.

21.   An apparatus for multi-domain network address translation, the apparatus comprising:

a management agent; and

a management information base accessible through the management agent, wherein the management information base comprises:

at least one management object defining a number of addresses in the domain-specific translation pool; and

a management object defining a domain for said number of addresses.

22.   The apparatus of claim 21, wherein the at least one management object comprises:

a first management object defining a beginning address for a range of addresses; and

a second management object defining a prefix length indicating a number of contiguous bits in an address mask.

23.   The apparatus of claim 21, wherein the at least one management object comprises:

a first management object defining a beginning address for a range of addresses; and

a second management object defining an ending address for the range of addresses.

24.   The apparatus of claim 21, wherein the at least one management object comprises:

a first management object defining a beginning address for a range of addresses; and

a second management object defining an address range size indicating a number of addresses in the range of addresses.

25.   The apparatus of claim 21, wherein the at least one management object comprises a management object for including an individual address in the number of addresses.

26.　　A management information base for configuring an interface for multi-domain network address translation, the management information base comprising:

at least one management object defining the interface; and

a management object defining a domain for the interface.

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27.　　The management information base of claim 26, wherein the at least one management object defining the interface comprises:

a management object defining an address for the interface.

28.　　The management information base of claim 26, wherein the at least one management object defining the interface comprises:

a management object defining a circuit for the interface.

29.　　The management information base of claim 26, wherein the at least one management object defining the interface comprises:

a management object defining an interface type for the interface.

30.　　The management information base of claim 29, wherein the interface type is one of a unidirectional inbound interface type, a unidirectional outbound interface type, and a bi-directional interface type.

31.　　The management information base of claim 26, comprising:

a management object (wfNatIfDelete) to create or delete the table entry;

a management object (wfNatIfDisable) to enable or disable the table entry;

a management object (wfNatIfIpAddress) indicating an address for the interface;

a management object (wfNatIfCircuit) indicating a circuit number for the interface;

a management object (wfNatIfType) indicating an interface type equal to one of unidirectional inbound, unidirectional outbound, and bi-directional;

a management object (wfNatIfState) indicating an interface state;

a management object (wfNatIfTxCount) indicating a number of packets mapped over

the interface from a local to a global network;

     a management object (wfNatIfRxCount) indicating a number of packets mapped over the interface from a global to a local network ;

     a management object (wfNatIfPktDropCount) indicating a number of packets dropped

5   on the interface; and

     a management object (wfNatIfDomain) indicating an address domain for the interface if the interface is configured as a bi-directional interface.

32.   An apparatus for multi-domain network address translation, the apparatus comprising:

a management agent; and

a management information base accessible through the management agent, wherein the management information base comprises:

5   at least one management object defining the interface; and

a management object defining a domain for the interface.

33.   The apparatus of claim 32, wherein the at least one management object defining the interface comprises:

a management object defining an address for the interface.

34.   The apparatus of claim 32, wherein the at least one management object defining the interface comprises:

a management object defining a circuit for the interface.

35.   The apparatus of claim 32, wherein the at least one management object defining the interface comprises:

a management object defining an interface type for the interface.

20   36.   The apparatus of claim 35, wherein the interface type is one of a unidirectional inbound interface type, a unidirectional outbound interface type, and a bi-directional interface type.

37.   The apparatus of claim 32, wherein the management information base comprises:

25   a management object (wfNatIfDelete) to create or delete the table entry;

a management object (wfNatIfDisable) to enable or disable the table entry;

a management object (wfNatIfIpAddress) indicating an address for the interface;

a management object (wfNatIfCircuit) indicating a circuit number for the interface;

a management object (wfNatIfType) indicating an interface type equal to one of

30   unidirectional inbound, unidirectional outbound, and bi-directional;

a management object (wfNatIfState) indicating an interface state;

a management object (wfNatIfTxCount) indicating a number of packets mapped over the interface from a local to a global network;

a management object (wfNatIfRxCount) indicating a number of packets mapped over the interface from a global to a local network ;

a management object (wfNatIfPktDropCount) indicating a number of packets dropped on the interface; and

a management object (wfNatIfDomain) indicating an address domain for the interface if the interface is configured as a bi-directional interface.

38.   A management information base for configuring static address translation mappings
for multi-domain network address translation, the management information base comprising:

a management object defining an original address;

a management object defining a translation address for the original address;

a management object defining an inbound domain for multi-domain network address
translation of the original address; and

a management object defining an outbound domain for multi-domain network address
translation of the original address.

39.   The management information base of claim 38, comprising:

a management object (wfNatStaticMappingDelete) to create or delete a table entry;

a management object (wfNatStaticMappingDisable) to enable or disable the table
entry;

a management object (wfNatStaticMappingOrigAddress) indicating an original (un-
translated) address for the translation;

a management object (wfNatStaticMappingTransAddress) indicating a translated
address for the translation;

a management object (wfNatStaticMappingProtocol) indicating a protocol for the
translation;

a management object (wfNatStaticMappingOrigPort) indicating an original port for
the translation;

a management object (wfNatStaticMappingTransPort) indicating a translated port for
the translation;

a management object (wfNatStaticMappingInDomain) indicating the inbound domain
for the translation;

a management object (wfNatStaticMappingOutDomain) indicating the outbound
domain for the translation;

a management object (wfNatStaticMappingStaticNextHop) indicating an address of a
next hop for the translation entry; and

a management object (wfNatStaticMappingUnnumCct) indicating whether the table

entry is associated with an unnumbered interface.

40. An apparatus for multi-domain network address translation, the apparatus comprising:

a management agent; and

a management information base accessible through the management agent, wherein the management information base comprises:

5   a management object defining an original address;

a management object defining a translation address for the original address;

a management object defining an inbound domain for multi-domain network address translation of the original address; and

a management object defining an outbound domain for multi-domain network address 10 translation of the original address.

41. The management information base of claim 40, wherein the management information base comprises:

a management object (wfNatStaticMappingDelete) to create or delete a table entry;

a management object (wfNatStaticMappingDisable) to enable or disable the table entry;

a management object (wfNatStaticMappingOrigAddress) indicating an original (un-translated) address for the translation;

a management object (wfNatStaticMappingTransAddress) indicating a translated 20 address for the translation;

a management object (wfNatStaticMappingProtocol) indicating a protocol for the translation;

a management object (wfNatStaticMappingOrigPort) indicating an original port for the translation;

25   a management object (wfNatStaticMappingTransPort) indicating a translated port for the translation;

a management object (wfNatStaticMappingInDomain) indicating the inbound domain for the translation;

a management object (wfNatStaticMappingOutDomain) indicating the outbound 30 domain for the translation;

a management object (wfNatStaticMappingStaticNextHop) indicating an address of a next hop for the translation entry; and

a management object (wfNatStaticMappingUnnumCct) indicating whether the table entry is associated with an unnumbered interface.

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42.   A management information base for monitoring address translations in a multi-domain network address translator, the management information base comprising:

a management object indicating an original address;

a management object indicating a translation address for the original address;

a management object indicating an inbound domain for multi-domain network address translation of the original address; and

a management object indicating an outbound domain for multi-domain network address translation of the original address.

43.   The management information base of claim 42, comprising:

a management object (wfNatMappingOrigAddress) an original (un-translated) address of the translation;

a management object (wfNatMappingTransAddress) indicating a translated address of the translation;

a management object (wfNatMappingProtocol) indicating a protocol of the translation;

a management object (wfNatMappingOrigPort) indicating an original port for the translation;

a management object (wfNatMappingTransPort) indicating a translated port for the translation;

a management object (wfNatMappingTxCount) indicating a number of packets forwarded using the translation;

a management object (wfNatMappingRxCount) indicating a number of packets received using the translation;

a management object (wfNatMappingTimeout) indicating an amount of time since the translation was last used;

a management object (wfNatMappingMode) indicating a source of the translation and a type of translation;

a management object (wfNatMappingInDomain) indicating an inbound domain for the translation; and

a management object (wfNatMappingOutDomain) indicating an outbound domain for the translation.

44.   An apparatus for multi-domain network address translation, the apparatus comprising:

a management agent; and

a management information base accessible through the management agent, wherein the management information base comprises:

5   a management object indicating an original address;

a management object indicating a translation address for the original address;

a management object indicating an inbound domain for multi-domain network address translation of the original address; and

a management object indicating an outbound domain for multi-domain network

10   address translation of the original address.

45.   The apparatus of claim 44, wherein the management information base comprises:

a management object (wfNatMappingOrigAddress) an original (un-translated) address of the translation;

a management object (wfNatMappingTransAddress) indicating a translated address of the translation;

a management object (wfNatMappingProtocol) indicating a protocol of the translation;

a management object (wfNatMappingOrigPort) indicating an original port for the

20   translation;

a management object (wfNatMappingTransPort) indicating a translated port for the translation;

a management object (wfNatMappingTxCount) indicating a number of packets forwarded using the translation;

25   a management object (wfNatMappingRxCount) indicating a number of packets received using the translation;

a management object (wfNatMappingTimeout) indicating an amount of time since the translation was last used;

a management object (wfNatMappingMode) indicating a source of the translation and

30   a type of translation;

a management object (wfNatMappingInDomain) indicating an inbound domain for the translation; and

a management object (wfNatMappingOutDomain) indicating an outbound domain for the translation.